



In The Clear

The Weather Newsletter For
Interior Central California



Spring/Summer 2011 Edition National Weather Service San Joaquin Valley/Hanford, CA

Cold Water Safety

Last spring and early summer, nearly 20 deaths and many preventable injuries occurred on area waterways. The majority of them were caused by the combination of high, fast flowing, cold water, from the Sierra Nevada snowmelt process.

The National Weather Service offices in Hanford and Sacramento have begun the snowmelt season with our "Cold Water Safety" program with public service announcements, online videos, and media releases. All residents of Central California should heed these important messages and practice safe tubing, rafting, boating, diving, and skiing, even if only taking a quick dip in what appears to be a refreshingly cool waterway.

It's important to remember that cold water can cause hypothermia to quickly set in; especially at temperatures below 70 degrees (Sierra Foothill water temperatures can be as cold as the lower 40s!).

So, help get the word out! Remind your family, friends, and neighbors that cold water can be deadly. Check out our website for more information about this safety concern. You can also visit the American Red Cross website (redcross.org) for more information about safe boating practices. Remember the following safety tips when planning your Central California weekend adventures:

- Always wear life jackets or vests, and keep other floatation gear handy when in the water
- Be aware of the early signs of hypothermia: uncontrollable shivering and numbness of limbs
- A person may appear to be drunk during the advanced stage and shivering may decrease or stop altogether
- If you are camping near a river or stream, remember that the highest water levels occur at night, usually within an hour or two either side of midnight. A campground may look dry and safe in the late afternoon, but can take on water at night

If everyone practices these safety tips and watches out for their family, friends and neighbors, we can reduce injuries and fatalities while still enjoying the splendid recreation that our region offers!



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December Deluge!

By Brian Ochs, Meteorologist and Assistant Climate Services Focal Point

December 2010 was very wet, as most locations received well above-average total rainfall and snow in the warning and forecast area for the NWS San Joaquin Valley forecast office. Numerous storms moved over the area during much of the month, especially during the latter half. The brunt of the rainfall occurred when a series of storms started to impact the area on the 17th, and it continued until the 22nd, except for one day (Dec 21st) that received little or no precipitation in the region. Some locations during the period, Dec 17th-22nd, received almost an entire year's worth of annual average rainfall. The storms during these dates were mainly subtropical in nature where snow levels remained above 7000 feet.

The record 24-hour rainfall amount for the month of December was broken in Bakersfield; this amount was 2.31 inches on December 18th-19th. In addition, this month's total rainfall was the highest on record for any month at this location by Christmas Day, which was 5.37 inches as of that date. Also, the first half (i.e., the months Jul-Dec) of the water year, which runs from Jul 1st to Jun 30th, had a record amount of rainfall since the late 19th century when records were first kept in Bakersfield. The amount of rain for July-December 2010 for Bakersfield was 7.25 inches, which is just over three quarters of an inch above the annual average amount of 6.49 inches. Bakersfield recorded 5.92 inches of rain for December 2010 alone, setting a new all-time record for the month!

Fresno received 5.82 inches of rain for December 2010; this month is now the second wettest December on record. Rainfall for the last half of the calendar year was 8.16 inches, which was 0.91 inch above the amount for Bakersfield. However, this amount did not exceed the annual average rainfall of 11.23 inches.

Ironically, main stem rivers did not flood while the Dec 17th-22nd storm series was occurring, as there was not enough snowmelt to feed into these rivers as snow depths in the higher elevations were increasing while this rain was occurring. There was an abundance of snowfall above the 7,000 foot elevation, and there were some instances when snowfall fell below 5,000 feet, such as at the onset of this storm series on the 17th and on the 20th. The rivers in the San Joaquin Valley commonly flood when the spring snowmelt from the Sierra Nevada flows into them during the months of May and June. However, flooding can occur during the winter months after enough snowpack has been established, and a sufficient amount melts along with heavy rainfall that extends to elevations above 8,000 feet or even 10,000 feet (e.g., the January 1997 flood event at the Pohono Bridge that crosses the Merced River in Yosemite National Park). However, numerous locations experienced flooding in low-lying areas, such as Visalia, Lamont, and McFarland. Levees in these low-lying areas had either failed or were in danger of failing. Most of the rain occurred in Kern County, and the desert areas were also hit as hard as locations on the other side of the mountains. Quite a few desert locations had also experienced roadside flooding. There were also many reports of rockslides and mudslides, mainly in the southern Sierra Nevada foothills and the mountain areas in Kern County.

This month happened to occur during a moderate La Nina event; usually La Nina conditions provide a dry winter to the southwestern United States, including interior central California. A weak La Nina, however, usually is not enough to indicate how wet or dry a season or month may actually be in some location outside of the equatorial Pacific Ocean such as interior central California.

Weather Wordsearch Puzzle

Kevin Durfee, Meteorologist and Hydrology Focal Point

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | D | K | O | M | S | O | L | A | U | Q | S | L | G | T | N | O | R | F | K | R | O | W |
| M | U | R | I | H | Z | Y | O | Z | O | N | N | E | S | R | F | U | O | L | C | N | A | E |
| C | R | S | K | O | D | A | N | R | O | T | O | I | N | H | A | Z | Z | E | E | V | O | A |
| L | T | N | K | R | D | I | W | R | U | S | M | O | N | S | O | O | N | L | A | H | T | |
| O | Z | O | I | U | C | H | A | Z | T | A | I | E | S | I | H | S | N | U | S | I | A | H |
| U | M | W | O | I | E | A | V | R | N | S | U | N | S | N | U | T | E | U | Y | I | A | E |
| S | A | L | C | E | N | C | O | R | I | O | I | I | S | P | O | E | B | E | N | L | O | P |
| M | C | L | E | L | I | V | G | R | A | M | I | S | E | R | H | M | H | V | O | H | W | A |
| O | F | O | L | C | H | S | E | W | R | P | G | R | E | A | I | P | E | P | P | A | Y | R |
| K | R | W | S | I | S | V | Q | R | A | H | C | E | Z | N | H | E | A | A | T | Z | T | G |
| L | O | E | T | C | N | N | O | R | S | E | L | L | O | O | E | R | R | E | I | O | S | R |
| E | N | A | S | I | U | N | O | I | L | I | S | L | T | S | G | G | R | C | C | M | I | A |
| T | T | Z | N | Q | S | U | P | E | R | C | U | E | L | H | T | A | O | O | O | S | M | P |
| E | S | H | A | I | U | H | Z | T | E | M | P | E | R | A | T | R | E | L | U | I | L | L |
| S | Y | R | S | H | O | A | E | R | U | O | E | R | G | U | I | G | O | D | C | L | O | U |
| T | N | N | U | U | H | I | L | C | K | N | O | T | O | O | T | R | A | P | N | Y | P | D |
| R | O | U | I | B | N | L | N | L | O | S | E | U | L | B | F | A | O | P | H | I | C | U |
| A | R | R | S | N | O | I | S | R | E | V | N | I | T | O | U | G | R | A | P | I | W | S |
| T | T | A | L | M | W | R | T | R | A | I | S | S | U | P | E | R | C | E | L | L | C | G |
| U | I | A | E | E | O | H | C | W | E | A | T | H | E | R | E | G | S | Q | P | L | E | R |
| S | P | D | C | E | L | K | L | I | R | O | D | U | S | T | O | N | K | T | A | M | L | A |
| A | A | O | N | O | R | T | E | A | M | I | S | E | R | M | O | R | A | U | J | E | E | P |
| W | E | A | T | H | E | S | B | Q | Z | O | N | E | S | U | T | A | R | E | P | M | E | T |

celsius

cloud

cold

coriolis

cumulonimbus

cyclogenesis

dust

fog

fronts

geostrophic

graph

hail

halo

haze

hot

icicle

inversion

knots

lee

microburst

mist

misty

monsoon

north

ozone

rain

smog

smoke

snow

squall

stratus

sunshine

supercell

synoptic

temperature

tornado

water

wave

weather

wind



Heat Tips for This Summer

By Brian Ochs, Meteorologist

Once again, summer is just around the corner. Temperatures during the dry periods between storm systems have been staying near seasonal averages during this spring. However, this does not mean the summer will remain cooler than normal. For every summer on record (since the 1880s, or late nineteenth century) temperatures have reached triple digits in Bakersfield and Fresno.

Here are a few heat tips to help deal with the summer heat:

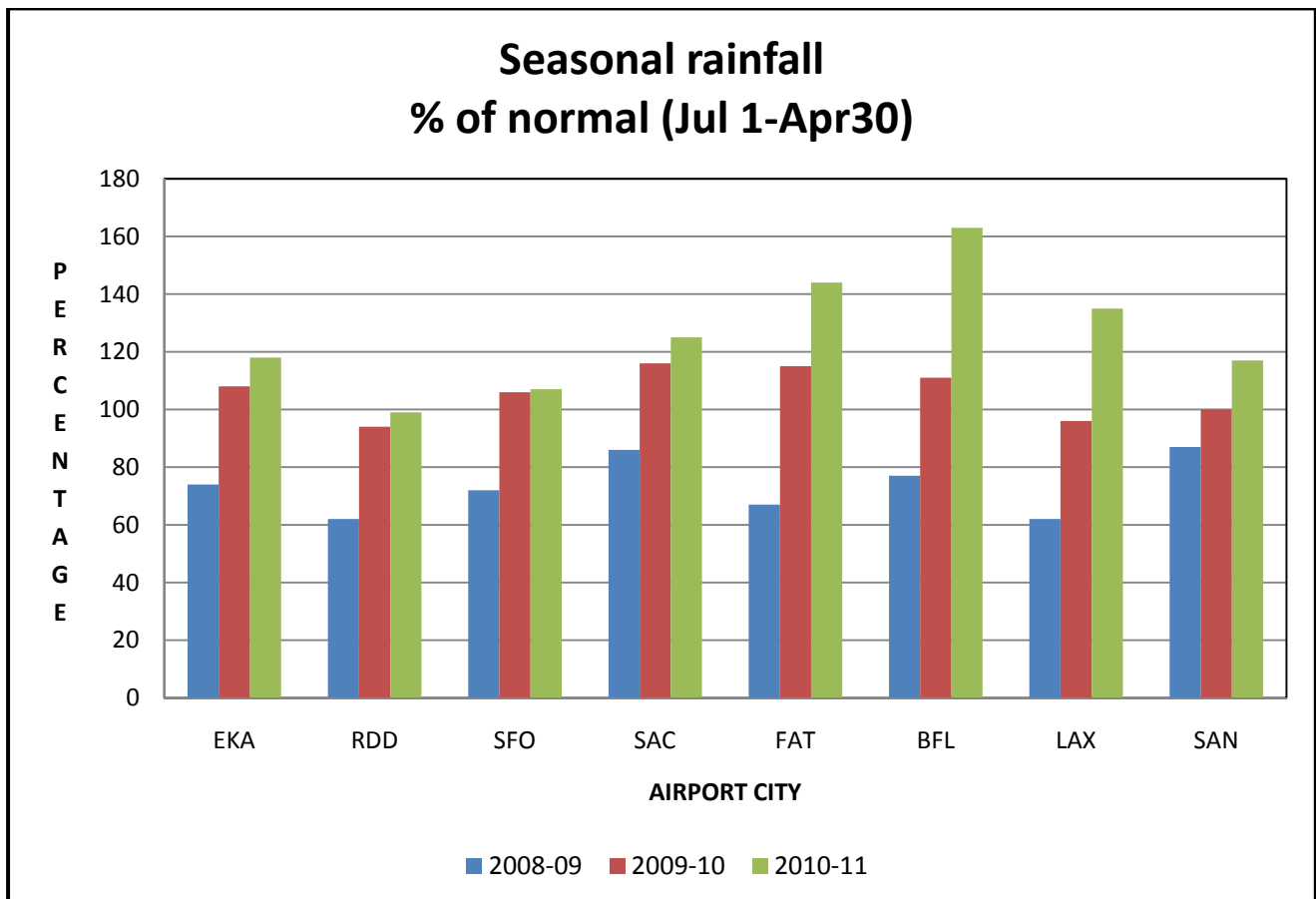
- Wear loose-fitted, light-colored, and lightweight clothing if spending time outdoors.
- Take brief breaks if outdoors for extended periods of time and drink plenty of water, instead of soft drinks or alcoholic beverages. Soft drinks and alcoholic beverages often speed up dehydration.
- The warmest times of day are usually from around 10 AM to 4 PM in most locations, although the highs can often occur later in the day. For example, maximum temperatures recorded in most locations throughout the San Joaquin Valley are often as late as 5 or 6 PM.
- Whenever possible, stay indoors, especially during the warmest parts of the day.
- Watch for signs of heat stroke – hot, red skin; changes in consciousness; rapid, weak pulse; rapid, shallow breathing. If you suspect someone is suffering from heat stroke, call 9-1-1 and move the person to a cooler place. Quickly cool the body by applying cool, wet cloths or towels to the skin (or misting it with water) and fanning the person. Watch for signs of breathing problems and make sure the airway is clear. Keep the person lying down.

In contrast, there is an increased risk for hypothermia if swimming in lakes, rivers, and other bodies of water in the Sierra Nevada during brief heat waves in the early summer and springtime after long periods of cooler temperatures and abundant snowfall, since the water can remain cold for quite some time. A prolonged period of heating is necessary to warm the water to safer and more comfortable temperatures.

For more information on heat safety, please visit www.redcross.org

Percent of Normal Seasonal Rainfall for Selected Cities in California

By Kevin Durfee, Meteorologist



Attention Motorists!

Need to know the latest road reports when you are traveling?
CalTrans has set up a special number to find out the status of roads.

Dial 1-800-427-ROAD.

NWS San Joaquin Valley is now on Facebook!

You can now contact the NWS forecast office in Hanford, CA on Facebook.
Link is below:

<http://www.facebook.com/US.NationalWeatherService/Hanford.gov>

Spring snowmelt flooding in Yosemite National Park

By Kevin Durfee, Meteorologist

When moisture-laden storms track into central California rather frequently during the winter months, they produce a very dense snowpack over the higher elevations of the Sierra Nevada. This sets the stage for a potentially large spring snowmelt flood event in Yosemite National Park. This type of event is typically triggered by the first lengthy spell of unseasonably warm weather in the spring. Generally, this occurs as early as the first week of April to as late as the first week of June. Fortunately, this type of flooding in Yosemite only occurs on the average of once every three to five years. Records that date back to the 19th century indicate that snowmelt flooding has occurred in Yosemite as far back as May of 1890. More recently, snowmelt flooding has been documented on at least three occasions. These are during the middle to latter part of May 2005, in May 2006, and in early June of 2010. The threat of snowmelt flooding this spring looks high, thanks to the presence of a deep snowpack and the likelihood of above normal temperatures that could last several days.

The primary focus of flooding in Yosemite is along the Merced River, which is the only major river that runs through the park. Ever since the historic flooding in Yosemite in early January of 1997, collaborative efforts have been made between the California-Nevada River Forecast Center and the National Weather Service in Hanford to improve flood prediction and the lead time of Flood Warnings in Yosemite. By the fall of 1997, a forecast point was established along the upper Merced River to better quantify the risk of flooding in Yosemite. That point is Pohono Bridge. The flood stage at this particular location was initially set at 12 feet, but after a snowmelt flood event in June of 1998 produced significant hydrological impacts within the park, the flood stage was lowered to 10 feet. Since then, daily forecasts from the CNRFC for Pohono Bridge and effective communication between the NWS and Yosemite have made a positive difference in the preparation for life-threatening floods and aided the decision making process of emergency-response teams within the park.



Evacuation of Yosemite National Park during January 1997 flood

| Runnin' the Numbers | | Fresno | | | Bakersfield | | |
|--|--------------------------|------------------------------------|------------------------------------|----------------------------------|-----------------------------------|------------------------------------|-------------------------------------|
| | | NOV '10 | DEC '10 | JAN '11 | NOV '10 | DEC '10 | JAN '11 |
| T E M P E R A T U R E (°F) | Average Maximum | 64.2 | 57.7 | 52.5 | 66.2 | 60.9 | 54.9 |
| | Average Monthly | 53.8 | 50.9 | 46.6 | 54.6 | 52.5 | 47.1 |
| | Departure from Normal | 1.1 | 5.7 | 0.6 | -0.2 | 3.3 | -0.7 |
| | Average Minimum | 43.4 | 44.1 | 40.6 | 43.1 | 44.1 | 39.2 |
| | Maximum | 90 | 67 | 63 | 94 | 71 | 64 |
| | Date(s) | 5 th | 10 th | 20 th | 5 th | 9 th | 12 th , 21 st |
| | Minimum | 31 | 30 | 33 | 31 | 31 | 34 |
| | Date(s) | 25 th | 31 st | 5 th | 30 th | 31 st | 4 th |
| | Number of Days Max >=90 | 1 | 0 | 0 | 1 | 0 | 0 |
| | Number of days Min <=32 | 3 | 1 | 0 | 3 | 2 | 0 |
| P R E C I P I T A T I O N (In.) | Total | 1.80 | 5.92 | 1.72 | 0.84 | 5.82 | 0.40 |
| | Departure from Normal | 0.70 | 4.58 | -0.44 | 0.25 | 5.06 | -0.78 |
| | Greatest in 24 hrs | 0.67 | 1.54 | 1.29 | 0.30 | 2.31 | 0.24 |
| | Date(s) | 20 th -21 st | 28 th -29 th | 1 st -2 nd | 7 th -8 th | 18 th -19 th | 30 th |
| | Number of days w/precip. | 10 | 15 | 5 | 8 | 13 | 5 |
| | Seasonal Total | 2.24 | 8.16 | 9.88 | 1.43 | 7.25 | 7.65 |
| | Departure from Normal | 0.21 | 4.94 | 4.35 | 0.31 | 5.37 | 4.59 |
| | Compared to Normal (%) | 110% | 242% | 179% | 128% | 386% | 250% |
| W I N D (mph) | Peak Speed | 29 | 33 | 22 | 31 | 43 | 36 |
| | Direction | NW | NW | SW | N, NW | NW | SE |
| | Date(s) | 20 th | 29 th | 2 nd | 6 th , 8 th | 29 th | 2 nd |
| P R E S S (in.) | Highest | 30.48 | 30.35 | 30.42 | 30.47 | 30.33 | 30.45 |
| | Date | 30 th | 27 th | 14 th | 30 th | 27 th | 13 th |
| | Lowest | 29.76 | 29.65 | 29.94 | 29.78 | 29.62 | 29.93 |
| | Date | 21 st | 19 th | 2 nd | 20 th | 22 nd | 2 nd |

| Runnin' the Numbers | | Fresno | | | Bakersfield | | |
|--|--------------------------|------------------------------------|------------------|------------------|-------------------------------------|------------------|---|
| | | FEB '11 | MAR '11 | APR '11 | FEB '11 | MAR '11 | APR '11 |
| T E M P E R A T U R E (°F) | Average Maximum | 60.0 | 65.1 | 72.8 | 62.4 | 67.1 | 74.5 |
| | Average Monthly | 49.1 | 55.4 | 60.7 | 49.8 | 56.0 | 61.3 |
| | Departure from Normal | -2.3 | -0.1 | -0.5 | -3.5 | -1.3 | -1.4 |
| | Average Minimum | 38.2 | 45.7 | 42.6 | 37.1 | 44.9 | 48.1 |
| | Maximum | 75 | 81 | 86 | 76 | 82 | 88 |
| | Date(s) | 12 th | 31 st | 1 st | 12 th | 31 st | 1 st |
| | Minimum | 30 | 36 | 37 | 31 | 34 | 36 |
| | Date(s) | 27 th | 1 st | 8 th | 28 th | 1 st | 9 th |
| | Number of Days Max >=90 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Number of days Min <=32 | 2 | 0 | 0 | 3 | 0 | 0 |
| P R E C I P I T A T I O N (in.) | Total | 1.60 | 3.46 | 0.32 | 0.49 | 1.67 | 0.21 |
| | Departure from Normal | -0.52 | 1.26 | -0.44 | -0.72 | 0.26 | -0.24 |
| | Greatest in 24 hrs | 0.63 | 2.82 | 0.32 | 0.34 | 0.89 | 0.18 |
| | Date(s) | 18 th -19 th | 20 th | 7 th | 25 th – 26 th | 20 th | 7 th |
| | Number of days w/precip. | 7 | 14 | 5 | 6 | 11 | 2 |
| | Seasonal Total | 11.48 | 14.94 | 15.26 | 8.14 | 9.81 | 10.02 |
| | Departure from Normal | 3.83 | 5.09 | 4.65 | 3.87 | 4.13 | 3.89 |
| | Compared to Normal (%) | 150% | 152% | 144% | 191% | 173% | 163% |
| W I N D (mph) | Peak Speed | 35 | 35 | 39 | 47 | 52 | 30 |
| | Direction | SE | S | NW | SE | SE | NW, NE, NW |
| | Date(s) | 25 th | 19 th | 28 th | 18 th | 20 th | 2 nd , 7 th , 25 th |
| P R E S S (in.) | Highest | 30.52 | 30.21 | 30.41 | 30.48 | 30.31 | 30.41 |
| | Date | 3 rd | 9 th | 14 th | 3 rd | 9 th | 14 th |
| | Lowest | 29.63 | 29.56 | 29.69 | 29.63 | 29.53 | 29.71 |
| | Date | 19 th | 20 th | 2 nd | 18 th | 20 th | 14 th |

StormReady Ceremony at Naval Air Station – Lemoore, CA

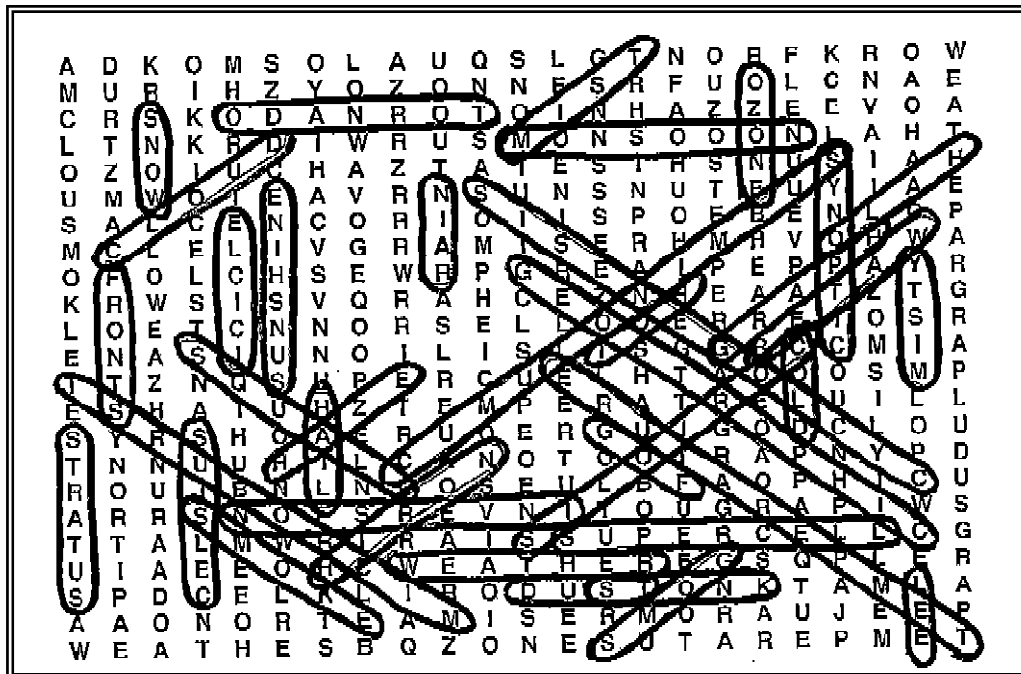
By James Brotherton, Warning Coordination Meteorologist (WCM)

The NWS Forecast Office in Hanford, CA recently attended a ceremony to recognize the Lemoore Naval Air Station as a StormReady Community. NAS Lemoore is the 3rd Navy installation in the U.S. to meet StormReady Certification, and the 1st to do so west of the Mississippi River. Severe weather is not unknown to this military base of 16,000 people, where an F1 tornado directly struck in 1996 and caused substantial damage. WCM James Brotherton worked closely with Rainer Streib, Emergency Management Officer, and Heather Feigner, Emergency Management Office Manager, to meet the requirements of the StormReady program. Among the achievements of the emergency management staff was to install NOAA Weather Radios at all base schools, administrative offices, aircraft hangars, and other locations. A unique capability of the navy base, and one of the warning systems included in the Severe Weather Action Plan, is indoor and outdoor "giant voice" systems to notify personnel of hazardous conditions.



Pictured in the photo above (from left to right): Rear Adm. William French, Commander Navy Region Southwest, Heather Feigner, Emergency Management Office Manager NAS Lemoore, Steve Mendenhall, Meteorologist in Charge NWS Hanford, Rainer Streib, Emergency Management Officer NAS Lemoore, and Capt. James Knapp, Commanding Officer NAS Lemoore.

Answers to Puzzle on Page 3:



Climate Summaries through April 2011 are available!

Please use the following link if you would like the monthly climate summaries for the central California interior:

<http://www.wrh.noaa.gov/hnx/clisum.php>

Then click on the link for the month you are interested in (earliest date is January 2006).



When stable, moist air flows over a mountain or range of mountains, an individual or series of visible waves called lenticular clouds may result on the downwind side. Due to their shape, they are often mistaken for Unidentified Flying Objects (UFO's). *Caption provided by David Johnson (Kern County weather spotter). Photo courtesy of Lindsay Johnson.*

In The Clear is a newsletter issued by the:



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